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Sensorless control of a double fed induction motor drive powered by a renewable source

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Abstract

This study presents a mathematical modeling, simulation, and analysis of an efficient control method for a double fed induction motor drive (DFIM), based on sliding mode control used super twisting algorithm (SMC-ST). Hence, this work aims to ameliorate both good performance and efficiency of the closed-loop system, while also supplied by a photovoltaic generator (PV), which employs maximum power point tracking (MPPT) controller based on perturb and observer technique (P&O). Additionally, the sliding mode observer (SMO) ensures the sensorless control of the machine, where allowing for high-quality estimation of the state vector. Finally, according to the digital simulation, the obtained results show the effectiveness of the suggested method.

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